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# TWO NEW DIXIDAE (DIPTERA) FROM SOUTH KOREA

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*Abstract.*—Two new species, ***Dixa dolichostyla*** and ***Dixa byersi***, are described with illustrations of their distinguishing morphological characteristics. *Dixa longistyla* Takahashi is reported from China and another species, *Dixa obtusa* Takahashi, is reported from South Korea.

*Key words:* Insecta, Diptera, Dixidae, *Dixa*

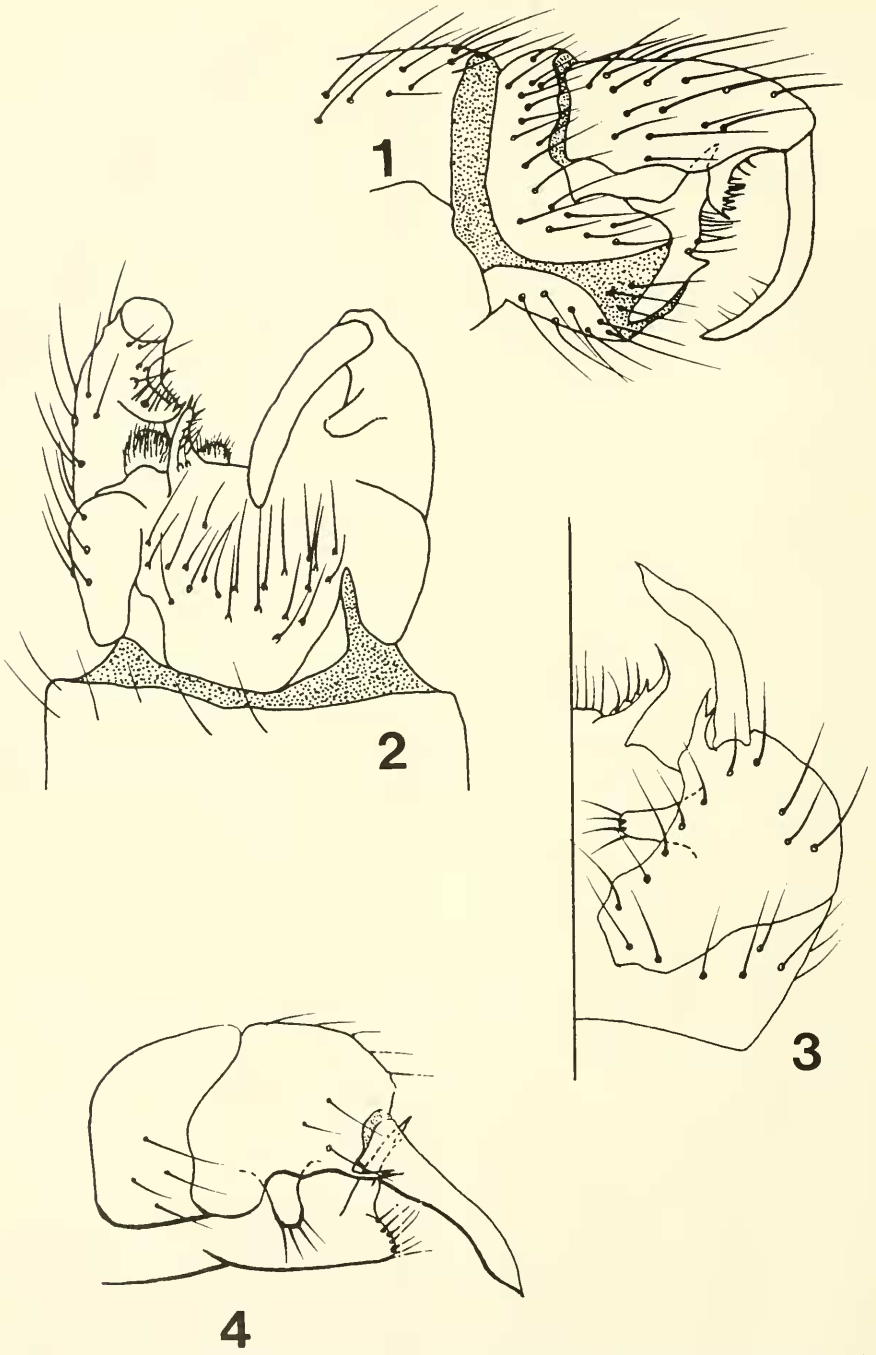
The Dixidae of eastern Asia are poorly known. Only the Japanese fauna has been adequately described (Takahashi 1958), a total of 12 species. Aside from these, only *Dixa guttipennis* Thomson has been reported, as well as two new species known only from North Korea (Peters 1992).

The paucity of dixid specimens from the Korean peninsula seems odd for two reasons. First, a number of medical entomologists from the U.S. were stationed in Korea during the Korean conflict. Second, at that time, dixids were considered by many entomologists to be a subfamily of Culicidae, a family widely studied by entomologists in the military. Therefore, one might expect that fair numbers of dixids exist in one or more major U.S. repositories.

The U.S. National Museum has only one dixid specimen from South Korea, identified by me as *Dixa obtusa* Takahashi. I discussed my frustrations in locating more Korean dixids with George W. Byers at the first dipterists' conference in Florida. He said he had been stationed in Korea while he was in the military and would check through his Korean material for dixids. Not long afterwards, I received a loan from the Snow Museum initiated by George Byers. It consisted of two previously undescribed dixid species, the subject of this paper.

## *Dixa dolichostyla* Peters, NEW SPECIES
Figs. 1–2

Adult.—*Head:* dark brown; antenna 2.3+× length of thorax, first flagellomere cylindrical, slightly fusiform, width: length 1:8. *Thorax:* Uniformly dark brown in type, without distinct vittae, but in paratype three dark brown vittae with pruinose areas between on scutum; anterior pronotum with 2 setae subequal to width of sclerite; scutellum with transverse row of 7 setae, with two setae in longitudinal line behind central one. *Wing:* With slight pigmentation around base of R 2+3, length of wing blade 3.45–3.6 mm (♂); Sc joins C basad to fork of Rs, m-cu broken; $A_1$ faintly distinguishable; few widely spaced macrotrichia on M basad of r-m; $R_{2+3}$:$R_3$ as 1:1.21–1.25; $M_{3+4}$:$M_{1+2}$ as 1:1.57–1.62; $M_{3+4}$:Mst as 1:1.29–1.62. *Halter:* Hyaline. *Legs:* Distal spiniform seta on tarsomeres 3 and 4 of foreleg, on 1–4 of middle and hind leg; weak basal recurved spiniform seta on tarsomere 5 of fore and middle leg, absent on hind leg. Tarsomere 1 of foreleg with one very long seta near base, located about its own length from basal end of tarsomere, 2× length of other leg setae; claws of fore and middle leg long, with 4 long teeth on venter, hind claws much




Figs. 1–4. *Dixa dolichostyla* lateral view (Fig. 1), ventral view (Fig. 2); *Dixa byersi* dorsal view (Fig. 3), lateral view (Fig. 4).

smaller, with few weak hairs; femur : tibia : tarsus length of forelegs as 1:1.18:1.5, middle legs as 1:1.0:1.5, hind legs as 1:1.13:2.0. *Terminalia:* gonocoxite without basal lobe; apical lobe pointed, with spines on posterior margin; gonostylus simple, curved, elongate; tergite 10 with heavily sclerotized nonsegmented cerci; ejaculatory duct short, heavily sclerotized; as in Figs. 1–2.

Specimens examined.—Holotype, off Hwy. #20, 8 mi SW of Kangnung, So. Korea. 128°47′E, 37°42′N, 1925′ elevation. Collected by George W. Byers on 8 June 1954. One male paratype from Central National Forest, 18 mi NE of Seoul, So. Korea. Collected at 400–500′ elevation on 29 May 1954 by George W. Byers. Deposited in the University of Michigan Zoology Museum, Division of Entomology.

### *Dixa byersi* Peters, New Species
Figs. 3–4

Adult.—*Head:* dark brown; flagellum missing. *Thorax:* distinct dark brown vittae on scutum, pruinose and yellowish-brown between; anterior pronotum dark brown, with 5 short setae; dark-brown posterior pronotum with a short seta on upper mesal area; pre-episternum with 3 setae; scutellum with transverse row of eleven setae, ½ as long as width of halter pedicel. *Wing:* without pigmentation; length of wing blade 2.7 mm (♂); Sc joins C basad to fork of Rs, m-cu incomplete, but not broken in middle as in most other species with broken m-cu, with portion of m-cu from Cu1 solid, that from M is missing; M in basal radial cell with macrotrichia on distal ⅔; $R_{2+3}$:$R_3$ as 1:1.75; $M_{3+4}$:$M_{1+2}$ as 1:1.55; $M_{3+4}$:Mst as 1:1.91. *Legs:* Only tarsomere 1 of pro- and mesothoracic legs present, without distal spiniform setae; all other tarsomeres missing. Femur: tibia length of foreleg as 1:1.14, of midleg as 1:1.0, of hind leg as 1:1.06. *Terminalia:* basal lobe of gonocoxite large, rounded, with 4 prominent apical setae; apical lobe smaller than basal lobe, slender, sharply pointed apically, with another subapical spinose projection; gonostylus without setae, curved, sharply pointed apically; tergite 10 with prominent unsegmented cerci, spinose on posterior margin; ejaculatory duct sclerotized, very long, severely twisted in middle; as in Figs. 3–4.

Specimens examined.—Holotype, 18 miles NE of Seoul, South Korea, in the Central National Forest. Collected by George W. Byers on 14 August 1954 at 400′–500′ elevation. Deposited in the University of Michigan Zoology Museum, Division of Entomology.

I take pleasure in naming this species after George Byers to honor his dedication to entomology, taxonomy and the Nematocerous Diptera.

The 2 species described above increase the number of dixid species collected on the East Asian mainland to 7. Two species previously known only from Japan have been collected on the mainland: *Dixa obtusa* Takahashi in South Korea and *Dixa longistyla* Takahashi in China. *Dixa guttipennis* Thomson is known only from China. Two other species, *Dixa orientalae* Peters and *Dixella corensis* Peters, have only been collected in North Korea.

Some readers may question my placement of *D. byersi* in the genus *Dixa,* since the antennal flagella are missing. Most keys to adult Dixidae rely heavily on antennal characters to determine genus, with some others split out by venational differences. Thus, *Neodixa* Tonnoir and *Nothodixa* Edwards are separable from the other genera by venational differences (unbranched $R_{2+3}$ in the former, r-m basal to fork of Rs in the latter). This leaves *Dixa* Meigen, *Meringodixa* Nowell, *Paleodixa* Contini, *Mesodixa* Belkin and *Dixella* Dyar and Shannon. Of these, *Dixella* Dyar and Shannon is without pre-episternal setae, and *Meringodixa* Nowell, *Mesodixa* Belkin, and *Paleodixa* Contini lack a basal lobe on the gonocoxite. For these reasons, and because of a lack of associated larvae, *D. byersi* is placed in the genus *Dixa* Dyar and Shannon.

The two species described herein may be distinguished from the 4 other "meniscus midges" (Disney, 1975) of the genus *Dixa* known from the Asian palearctic mainland by the following: *Dixa guttipennis* Thomson is the only species with elaborately patterned wings, *Dixa longistyla* Takahashi is the only known species with a group of 3 long setae on tarsomere one of the foreleg, *Dixa orientalae* Peters is the only species with a basal spiniform seta on tarsomere 3 of the middle leg, and *Dixella obtusa* Takahashi is the only species with a distinct swelling in the middle of flagellomere 1.

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